

MEMORANDUM

*cc H. Wakeham**E. Wakeham - Comments
4/9/73
please.*

April 2, 1973

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TO: Dr. W. W. Bates
Mr. Everette Cogbill
Dr. Ivor W. Hughes
Mr. Frank Resnik ✓
Dr. Murray Senkus
Dr. William L. Steele

FROM: A. W. Spears

Please find attached four linear regression equations relating to the last set of data produced by the FTC and TITL laboratories. Points indicated by a star are single data points, and those indicated by zero are multiple data points. The solid lines represent the indicated equations and the dotted lines represent an equation of slope 1 and zero intercept, or perfect agreement between laboratories.

Examination of the nicotine regression line indicates a near perfect relationship between laboratories. The equation of perfect agreement is within the error of the experimental regression line.

Examination of the tar regression line indicates that there is not a perfect relationship between laboratories. At a level of 18.1 mg. TITL, the FTC value is 18.4. This difference is consistent with the difference found between our laboratories and that of the FTC when the monitor cigarettes were smoked.

The wet TPM equations illustrate that the relation between laboratories is similar to that for tar.

Water values were obtained by the difference between TPM and tar plus nicotine, since the actual water value was not available from FTC. One error was obvious in the FTC data, with the water value obtained by subtraction being negative. The regression line is parallel to the line of perfect agreement, but has an intercept of 0.5. It is also apparent that the individual points are more scattered (correlation coefficient .96) than in any of the other relations (correlation coefficient of .99 for each).

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Although I don't believe that it is possible to conclusively indicate why the difference in the data exists between the two laboratories, certain reasonable conclusions can be suggested from this analysis.

1. Nicotine is being analyzed in the same way at both laboratories, and the yield of nicotine from the cigarettes is the same in both laboratories.
2. Point 1 indicates that the smoking machines are performing in the same way at both laboratories.
3. The difference in the water data does not explain the difference in tar between the two laboratories. Actually, if the difference in water did not exist, the agreement between laboratories on tar would be decreased.
4. A slope of "1" obtained in the water regression indicates that the difference of .5 mg. of water between laboratories is not due to an analytical error in the analysis.
5. The fact that the difference between laboratories exists in the wet TPM, coupled with the difference in water and the agreement for nicotine, suggests that one laboratory does not have the cigarettes in proper condition for smoking. Poor conditions in the smoking laboratory or inadequate conditioning time would be consistent with the scatter in water data.
6. Based on the previous agreement between industry laboratories and TITL in the monitor-cigarette, it is concluded that the problem is in the FTC laboratory. Also, the smoking machines and laboratory conditions were carefully checked at TITL before this market test.

Since you have kindly delegated me to discuss with FTC the fact that we believe their laboratory is in error, I would appreciate your comments before presenting them with these conclusions.

AWS:rcb

Attachments


PM3001059979

TPM Wet X 10⁻¹

* [TITL-TPM]

0.16

1. 1.

2.10

5. 17

4. 10

5. 19 81 1 1

[FTC-TPM] I...I...I...I...I...I...I...I...I...I...I

Q. 10

U. 69

1 • 1 1/2

1. 69

2.14

2.60

3.10

3.60

4. 10

4.60

5. 14

* 1987 I . . . I . . . I . . . I . . . I . . . I . . . I . . . I . . . I

$$\text{TITL}_{\text{TPM}} = .968 \text{ FTC}_{\text{TPM}} + .909$$

Standard error of slope .011

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Tar X 10^{-1}

* [T I T L - T A R]

(3) 1 (3)

1 - 14

2. 10

3.14

4. 14

5.14 * 141 1

. UFTC-TAF] N . . . I . . . I . . . I . . . I . . . I . . . I . . . I . . . I . . . I . . . I

Q - 10

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1. 17

1. 64

2.10

2.69

3.10

3.60

4. 1 1/2

4.60

5.10

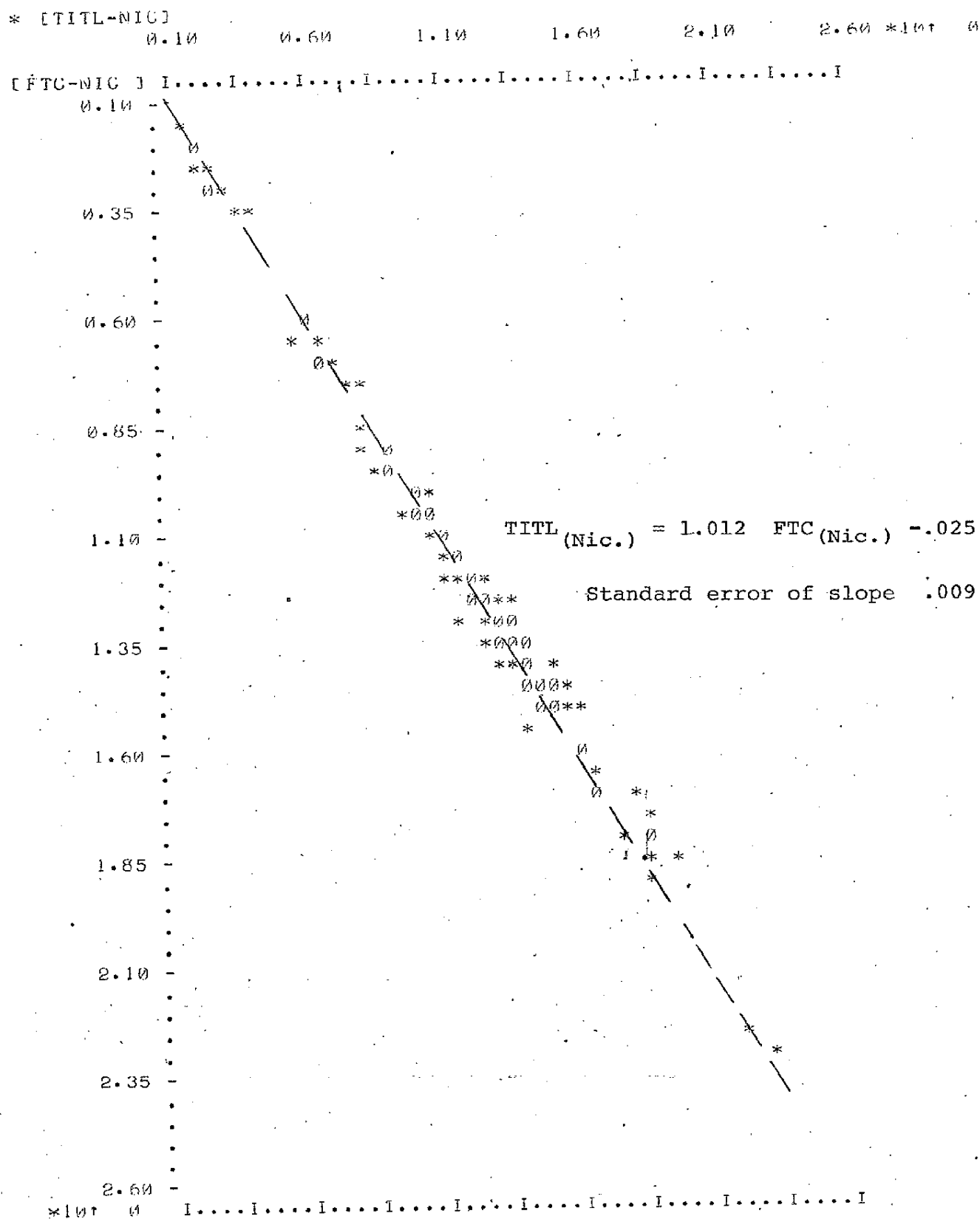
*10† I I I I I I I I I I

$$\text{TITL}_{(\text{Tar})} = .939 \text{ FTC}_{(\text{Tar})} + .793$$

Standard error of slope .009

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Nicotine

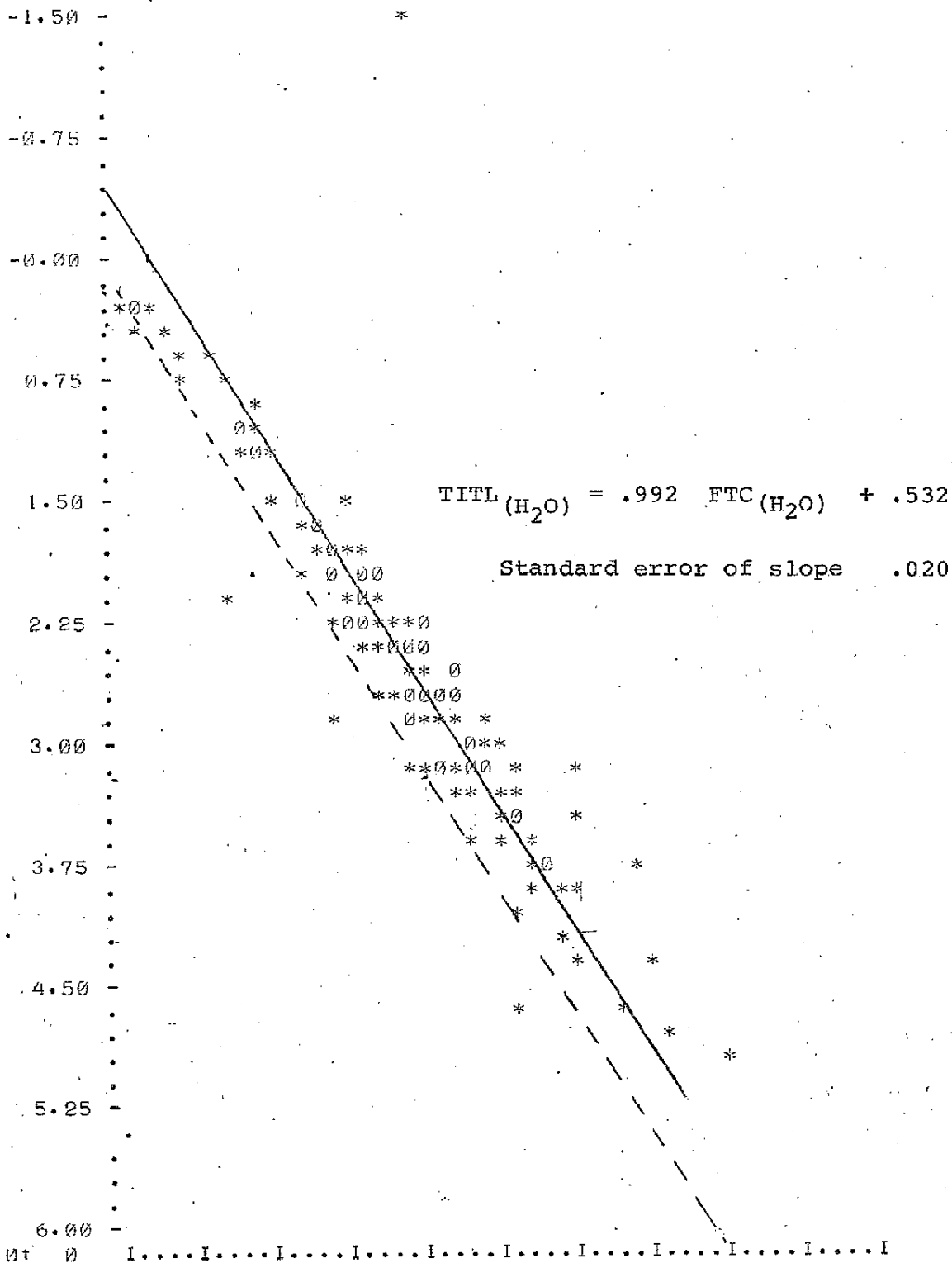


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Water

* [TITL]						
0.20	1.70	3.20	4.70	6.20	7.70	*101	0

[FTC] I.,.,I.,.,I.,.,I.,.,I.,.,I.,.,I.,.,I.,.,I.,.,I.



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